

# DXing The TV Bands: An Unusual And Exciting Hobby

**Super Long Distance TV Reception Is HOT!**

By William Eckberg

I confess. I look at snowy TV pictures for hours on end. I even take pictures of these snowy pictures. I'm a TV DXer. Forty-five years in the hobby can't calm the excitement when someone calls me in Illinois from a distant city and says, "I'm watching tropo into your area this minute, what do you see?" A few years ago, someone phoned from New York State in midwinter and said, "I just received double-hop E's from California. What do you see?" I painfully admitted I hadn't even turned on the TV.

Why do we TV DX? Is it because no two openings are exactly alike? Or the thrill of the unknown? What kind of receiving equipment do we use? And what do all these strange terms mean — tropo, double-hop E's? In this article, I'll explain these terms and give accounts of some bizarre TV DX.

Many DXers take pictures of the sta-

tion's call letters as they briefly flash on the TV screen, and a large number of DXers are even drawn into the technical aspects of the hobby. What antenna, preamp, or receiver is best, and why? Still others like receiving a QSL letter of verification. (I've even seen a panel truck covered from headlights to rear bumper with TV and FM logo stickers. Yet another DXer was seen with a TV antenna projecting through the sunroof of his car!)

In the '50s regular columns appeared in *Radio Electronics* magazine detailing DXer's reception reports, which was first written by E.P. Tilton and later Bob Cooper. The band, in those days, was wide open beyond the large cities. VHF was king, and new stations were coming on the air monthly. Many UHF stations left the air as abruptly as they began operations. They were unable to compete with VHF.

Little interference was present — this was indeed the golden age of TV DXing.

## A Little History

The American Ionospheric Propagation Association was the unlikely name of the first TV DX organization. Formed in western New York State by several folks in the early '50s, it operated for 10 years, mailing its last bulletin July 12, 1963.

The current organization began in 1967 and is called the Worldwide TV-FM DX Association. The founders were Gary Olson and Morrie Goldman. The first club bulletin, termed a sample issue, was dated September–October 1967. Their first convention was held in Steger, Illinois in May 1969. Recent locations include Lake Placid, New York; Estes Park, Colorado; Atlanta, Georgia; and Nashville, Tennessee. A club publication called the *VHF-UHF Digest* is sent out monthly. Members interested in FM and satellite reception are also accommodated. Late-breaking TV reception reports are covered in the Western and Eastern TV DX sections, and numerous columns are also included in the Digest.

## Unusual Loggings Via Sporadic-E

VHF TV channels 2 through 6 cover 54 to 88 MHz. VHF channels 7 through 13 cover 174 to 216 MHz. UHF channels 14 through 69 cover 470 to 806 MHz. (A channel 1 was assigned and deleted during TV's infancy.) Channel 37 is reserved for radio astronomy and 70–83 were dropped a few years ago.

E-skip is an important mode of long distance TV reception. The station's signal is reflected off the E region of the ionosphere at a height of about 60 miles.



Interesting verification card from Cuba received in 1961.



TV DXers outside "The Weather Channel" in Atlanta in August 1997. TV personalities Jill Brown and Dan Atkinson had just taken us through the facilities. The WTFDA convention was nearby.

The picture is typically strong and ghosting. Since the '50s, TV DXers have noticed E-skip is associated with intense thunderstorms. Recent research might prove us correct. Unusual flashes occur above thunderstorms called red sprites, blue jets, etc. Most E's activity occurs from May to August. Activity also develops near the shortest day of the year in December. It's first noticed on channel 2 and can rapidly move up through channel 6 into the FM band. Normal DX range is 700 to 1,400 miles. Twice I've seen it under 500 miles.

In rare instances, activity will reach channel 7 and higher. In June 1995, Jeff Kadet and Frank Merrill of Macomb, Illinois, logged CIPA channel 9 in Prince Albert, SA, at a distance of 1,130 miles. E's reach channel 12 — probably a once-in-a-lifetime opening.

The western states abound with many channels 2 through 6 low-band translators (low-power relay of a primary station on a different channel). Unbelievably, on June 9, 1977, two DXers at nearby locations in New York logged KGIN channel 11, Grand Island, Nebraska, on channel 4. After extensive research, they determined reception to be a very low-power translator in McCook, Nebraska!

One or two DXers a year will see double hop E's. Distance is typically 1,500 to 2,500 miles. A typical 2E opening happened in June 1990. Bob Seybold received Phoenix channel 3 and Flagstaff channel 2 at a distance of 1,800 miles. He also saw a very short skip on channel 3 in Harrisburg, Illinois, (600 miles) from his western New York location. I have seen

2E three times in the past, namely San Salvador and Los Angeles on channel 2. Seattle on channel 5 was a more recent reception. Many times a short skip station is in the mix, which might be a tip-off that highly unusual conditions are present conducive to 2E, which is strong and ghosting, similar to single-hop E reception.

How 2E occurs is debatable. The signal can bounce from two or more ionized clouds then return to Earth. The signal can go to an ionized cloud, be reflected back to Earth or water, be reflected to another ionized cloud and finally bounce down to your receiver. Either way, several reflective objects must be aligned between the TV transmitter and your receiver. Two or more ionized clouds will not line up for long, explaining the short duration of 2E reception. Very short E's indicate extreme turmoil in the ionosphere and possibly many highly ionized clouds between you and the transmitter. Michael Wimer of Woodbridge, Virginia, snapped a rare photo of 2E reception — a 1,600 mile path from Virginia to Puerto Rico.

### Unusual Loggings Via The Troposphere

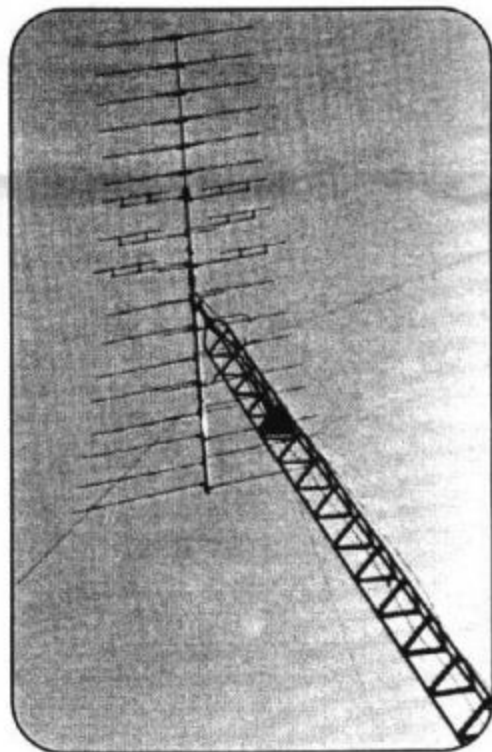
TV reception via **tropospheric bending** is another important propagation mode. UHF channels 14 to 69 reign supreme followed by VHF channels 2 through 13. Tropo is a phenomenon of the lower atmosphere.

Fernando Garcia of Guadeloupe is the long-distance tropo king of the TV bands. From a high elevation in northern

Mexico, he has an all-water path to south Florida and Gulf coast TV stations. Spring and fall seem to be the best times for him. He frequently has 1,200-mile tropo into central and south Florida and has recently seen tropo into Iowa.

Another area excellent for tropo is the outer banks area of North Carolina. An all-water path stretches to south Florida and along the eastern seaboard into the Maritime Provinces. The first high hills in western New York State presents an opportunity for 1,000-mile tropo to Texas and the Gulf coast. These are among the best locations in the U.S.

From northern Illinois, the best direction for tropo is down the Mississippi River from July to October. Many good openings can also occur in mid-winter. Tropo can materialize anytime there's a mixing of hot and cold air masses. Strange tropo ducts occur unexpectedly. A line may be drawn to a distant city, and only stations in a narrow band are received. A much closer station on the same channel, in exactly the same direction, and on the air, is often absent. And only a portion of the UHF band is sometimes affected. A single snow-free UHF station in a remote city with many UHF stations can appear, then suddenly the station will vanish. Theory says a duct has a top, sides, and sometimes a bottom. It can be the straight portion of a weather front, and distance is unimportant. The transmitter can be 600 or 1,000 miles distant, and be received like a local station. Channel 26 in



Channel Master's 1110 VHF antenna looking west for E-skip.

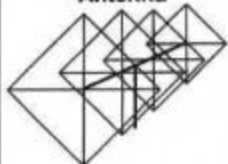
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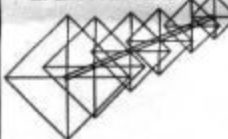
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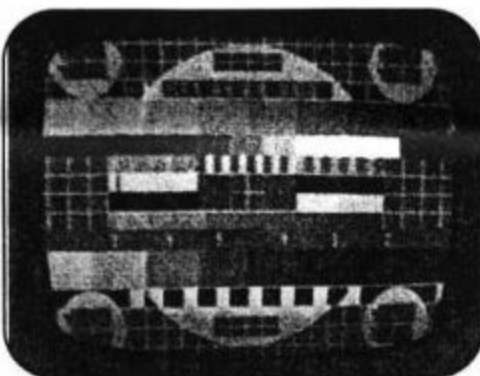
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1,350 E-skip to Mexico hits the bullseye at Monterrey.



A "Cuban Phillips Test Pattern" on channel 3, an E-skip logging over 1,400 miles. Castro ran this test pattern all day for years.

Augusta, Georgia, is a personal logging I attribute to a duct. WAGT was 725 miles distant and briefly snow-free. Ordinarily tropo is more widespread, but duct type openings are routinely missed — an amazing form of DX that's seldom seen.

## Other Types of Propagation

Meteors continually penetrate the ionosphere. A small area is ionized and TV signals are then reflected. Channels 2 through 6 are the primary channels affected.

Lightning scatter is the domain of the UHF band. In Indiana recently, Cincinnati, Ohio's UHF stations were pulsating and watchable at a distance of 325 miles.

Another form of propagation is the aurora borealis or northern lights, which primarily affects the lower TV bands. Check Internet Websites for aurora alerts.

## Screened Dishes, Preamps, And Hot Receivers

Serious DXers spend thousands of dollars on receiving equipment, but you don't have to! Mike Condon of Poynette, Wisconsin has installed an elaborate antenna array atop a 160-foot tower on a

hill 850 feet above sea level. But numerous DXers see 600-mile tropo and 1,300-mile skip on rabbit ears and small outdoor balcony antennas or pole-mounted attic antennas. TV DXers' most important attribute is knowing when and where to look!

Channel Master's 1110 is the most popular VHF antenna. DXers like the 1110 for its superior front-to-back ratio and pattern. Although it has been discontinued, other comparable VHF antennas work quite well for DXing.

Channel Master's seven-foot dish (model 4251) which has high gain and sharp directivity, is the most popular UHF antenna. Many TV DXers screen the antenna with chicken wire. I screened the antenna with the elements of an identical antenna. Both methods work fine to improve the front-to-back ratio dramatically. Gain is improved in the upper reaches of the UHF spectrum.

The preamp sets the noise figure for the entire system. Many DXers use RD Lab's custom-built UHF preamps. I have the UA-903 with 15dB gain and a 1.0dB noise figure. Incorporated is a special design with very high overload resistance for strong signal areas. The UA-902 is also available with 27dB gain and a 0.4dB noise figure for DXers in isolated areas. They contain the latest GaAs FET circuitry and are available on special order. VHF and FM preamps are also available.

The weak link for the TV DXer is the TV receiver. No one builds one to fit DXers requirements, as we comprise such a small group. In contrast, hams and FM enthusiasts can buy excellent receiver. TV DXers solve the problem by purchasing a TV set for each use. Receivers used include the 1966-era 14N22 Zenith black and white. Zenith L and N1310 13-inch color sets (circa 1979-1982) are also popular. A 1990-era nine-inch AC/DC Zenith color receiver (G0930Y) is good. The latter set's push-button electronic tuning is nice during a fast-moving tropo opening. Other suitable sets are available. The most recent receivers have better traps in the UHF to prevent the audio and video components of the signal from bleeding into the adjacent channels and destroying a weak signal, but the early sets have a vertical hold control. Many stations astutely place their call in the sync bar so the picture must be manually rolled to see the call. A vintage receiver is mandatory for meteor scatter DX. Those Zenith L and N1310 TV sets are a good compromise, if they can be found.

One useful feature that's helpful to the



KXLF-4 in Butte, Montana, was signing off with the national anthem. Early morning E-skip is rare — distance was 1,200 miles!

DXer is only found on an ICOM. Several DXers own the ICOM R-7000 receiver or the newer R-7100. A video adapter and separate monitor can be added. TV transmitters on the same channel will have (+), (0) or (-) offset audio. Stations on the same channel and with different offsets can be heard individually with an ICOM. It also gives the illusion of being more sensitive because it has the option of a narrow FM filter which is used to separate the different TV audio offsets.

Weak, distant UHF reception, received under normal conditions, is called tropo scatter. I see and hear weak fading signals to 375 miles every day, achievable under normal conditions with a sensitive antenna system and TV receiver. Minneapolis,

### Equipment Sources

Antennacraft  
P.O. Box 1005  
Burlington, IA 52601  
Phone: 319-754-7575 or 800-553-2377

Channel Master  
1315 Industrial Park Drive  
Smithfield, NC 27577  
Phone: 919-934-9711  
FAX: 919-989-2200

RDX Labs  
P.O. Box 88  
Derby, KS 67037

Rohn Industries  
6718 W. Plank Road  
Peoria, IL 61604  
Phone: 309-697-4400

Worldwide TV DX Association  
P.O. Box 501  
Somerville, CT 06072

Kansas City, and Cincinnati UHF stations are a few that reach my home. An ICOM can extend the audio of these stations about 100 miles!

A Rohn No. 25 crankup tower supports my UHF antenna. It's only 52-feet high as the area is severely congested with UHF stations. The signal strength of a nearby station rises faster than a distant one with increasing antenna height. A 52-foot height will avoid most ground reflections. Of course ideal antenna height can

be higher in a fringe area. A VHF antenna can be lower for sporadic-E on channels 2 through 6. I use a Yaesu G-400RC rotor and 130-feet of Jerrold RG11 cable for UHF. The VHF antenna is on another tower.

But the fact is, you don't need thousands of dollars of antennas, towers, TV receivers, and rotors — more than anything patience is a virtue and knowing where and when to tune in will get you superb TV DX results! ■

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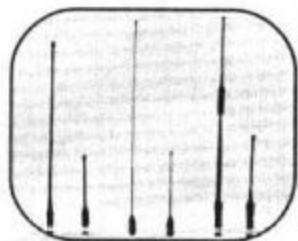
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